Sabah Snake Grass: Nature's Solution to Superbug Reservoirs

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The leaves of Clinacanthus nutans (Sabah Snake Grass) have long been used traditionally in Asia for treatment of skin rashes and snake bites. This project investigates the effect of Clinacanthus nutans leaf extract on the human wound healing process in Methicillin-resistant Staphylococcus aureus (MRSA) reservoirs such as pressure ulcers (51% MRSA-colonised) and diabetic foot ulcers (49% MRSA-colonised). Clinacanthus nutans leaf extract was prepared using Plant Tissue Homogenization in methanol, chloroform and hexane. Antimicrobial Sensitivity Testing on MRSA was done on Mueller-Hinton agar. In aqueous medium, the light absorbance of Mueller-Hinton broth with added extract was measured. Cytotoxicity testing on human skin cells (HaCaT keratinocytes) was carried out using MTS cell viability assay. The extract was applied onto a scratch on a monolayer of skin cells to investigate the extract's effect on cell proliferation to simulate wound closure. Toxicology testing was done in vivo on Rhynchophorus ferrugineus larvae (sago worms). 30mg/mL of methanol-extracted Clinacanthus nutans leaf extract is the optimum concentration in both aqueous and solid media to achieve maximum anti-bacterial effect (174.19%) on MRSA. The extracts are non-toxic to human skin cells, and promote cell migration to close a scratch 32 hours faster than the control. Methanol extract has high antioxidant activity and phenolic content, showing its ability to relieve oxidative stress on a wound. The extract is non-toxic to sago worms, showing no observed adverse effects. In conclusion, Clinacanthus nutans leaf extract improves the wound healing process in MRSA reservoirs by eliminating antibiotic-resistant pathogens, promoting skin cell proliferation and relieving oxidative stress.